# SUPPORTING SYNCHRONOUS DISTANCE LANGUAGE LEARNING WITH DESKTOP VIDEOCONFERENCING

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## ABSTRACT

This study involves three dimensions: distance language education (DLE) as the context, videoconferencing as the technology, and the provision of synchronous oral and visual interaction in DLE as the core research problem. This article follows on this author's previous research in regard to the inclusion of oral and visual interaction in distance language learning through the use of Internet-based desktop videoconferencing tools. It evaluates the findings from a two-stage evaluation of a particular videoconferencing tool, NetMeeting. The results from this research confirm that the present generation of Internet-based desktop videoconferencing tools are capable of supporting oral and visual interaction in DLE. Recommendations are presented for future use of videoconferencing in DLE.

## INTRODUCTION

This research essentially concerns itself with the provision of synchronous oral and visual interaction in a DLE context. Through an extensive review, Wang and Sun (2001) point out that this has been problematic due to the existence of a physical distance between the learner and education provider. Print matter and cassette-taped texts have remained as the major forms of subject matter delivery. The development of distance students' speaking and interactional skills has largely been left to the students themselves with little academic support and no spontaneous feedback. Consequently, the speaking and interactional skills of distance language learners have often been poor and sometimes non-existent (for discussions of listening and speaking problems in DLE, see Goodfellow, Manning, & Lamy, 1999; Hampel & Hauck, 2004; Kötter, 2001;Wang & Sun, 2000; Wong & Fauverge, 1999). The significance and urgency of finding a solution to this problem have led the author's research to an evaluation of the capabilities of CMC, and Internet-based desktop videoconferencing tools emerged as a potential solution to the problem. Due to technical difficulties, such as Internet bandwidth limitation and latency, few empirical studies have been carried out to examine the potential of Internet-based desktop videoconferencing in facilitating oral and visual interaction in DLE. The present study aims to fill this gap through a formative evaluation of one specific videoconferencing tool, NetMeeting.

A preliminary evaluation with language teachers and computer specialists was carried out in 2001 to investigate the technological capabilities of four Internet-based desktop videoconferencing tools (CUseeMe, ICUII, Video VoxPhone Gold, and NetMeeting), and NetMeeting revealed itself as the most potentially appropriate tool for supporting oral and visual interaction in DLE (Wang, 2004). Following this preliminary study, a more in-depth two-stage evaluation of NetMeeting was conducted in both the intranet and Internet environments, this time involving language learners. This article will first discuss the importance of interaction (especially oral and visual interaction) to communicative distance language learning and then report the findings from the two-stage evaluation of NetMeeting concentrating on issues such as user friendliness, audio and video quality, reliability, and cost. Due to manuscript length limitations, this article will not discuss language learning outcomes as they will require much more space for a thorough analysis. Instead, it will concentrate on the technological capabilities of NetMeeting in supporting oral and visual interaction in a DLE context and the participants' perceptions of this medium. These capabilities will be discussed in the context of distance language learning and how they can be

utilized to facilitate oral and visual interaction. It is hoped that this article will inform distance language professionals of the capabilities and limitations of the present generation of Internet-based videoconferencing tools and encourage them to constantly explore ways of providing oral and visual interaction in DLE. Recommendations for employing videoconferencing tools will be made for future research.

The two-stage evaluation saw the participation of eight language learners from Griffith University in Australia, three on-campus and five distance students. A total of 44 videoconferencing sessions were carried out: 15 in Stage 1 and 29 in Stage 2. A combination of data collection methods was employed during the evaluation: post-installation surveys, post-session surveys and interviews, post-trial surveys, and interviews and personal observations by the researcher.

## INTERACTION AND LANGUAGE LEARNING

The importance of interaction to communicative L2 learning has long been established and interaction has been regarded as an integral part of communicative language learning (Gass, 2003; Hall, 1995; Kitade, 2000; Lantolf, 1994; Mitchell & Myles, 1998; Ohta, 1995; Swain & Lapkin,1995). The facilitating effect of interaction on L2 acquisition is best summarized by Long's (1996) iteraction hpothesis:

> negotiation for meaning, and especially negotiation work that triggers interactional adjustments by the NS [Native Speaker] or more competent interlocutor, facilitates acquisition because it connects input, internal learner capacities, particularly selective attention, and output in productive ways. (pp. 451-452)

In order to provide a theoretical framework to examine the problem of lack of provision of oral and visual interaction in DLE, it is important to first look at what interaction entails, especially at a time when computer mediated communication (CMC) is gaining importance. Probing the nature of interaction, one cannot help but notice its complexity and hence the problem of defining it. Such complexity lies not only in the inclusiveness and extensiveness of interaction, but also in its evolving content and roles in a time of technological innovation. In other words, the concept of interaction today appears much richer in content, scope, and depth than it did 20 years ago. Thus, interaction will be discussed here in relation to recent developments in computer-assisted language learning (CALL) and CMC. A review of the literature on interaction reveals two major basic traits of interaction: its social nature and its individual nature. Bates (1997) neatly summarizes these distinctions as follows:

> the first is an **individual**, isolated activity, and that is the interaction of a learner **with** the learning material, be it text, television or computer program; the second is a **social** activity, and that is the interaction between two or more people **about** the learning material. **Both** kinds of interactions are important in learning. (emphasis in original; p. 100)

As the focus of this article is on interaction as a social activity, the individual nature of interaction will not be discussed here. There is little controversy over the social nature of interaction. In fact, the word "interaction" itself denotes such a characteristic. In other words, interaction is a socially reciprocal action involving two or more people, and it can be face-to-face or technology-mediated. Twenty years ago, the definition of interaction was largely in the realm of a face-to-face mode. Wells (1981, pp. 46-47) used it interchangeably with the word "communication." He suggested firstly that "linguistic interaction is a collaborative activity," and then moved on to say that "linguistic communication involves the establishment of a triangular relationship between the sender, the receiver, and the context of situation." Rivers (1987) renders Wells' understanding of interaction into a verbal version, "listening to others, talking with others, negotiating meaning in a shared context" (p. 4). As interest in and research on interaction grew, scholars (e.g., Neu, 1990; Oxford, 1995) began to identify the importance of the non-verbal aspect of face-to-face interaction and its impact on communicative language acquisition.

The rapid development of technology has vastly enriched the content and scope of interaction. In fact, a new term has appeared to denote the influence of technology in interaction -- *technologized interaction* (see Hutchby, 2001). Again, this type of interaction can be individual or social. Telephone and computer mediated human-human interaction are two important forms of technologized social interaction offering various types of interaction that have not existed previously. In such interaction, the technology is seen as a tool to be used by the human to achieve communicative goals.

In comparison with telephone conversation, computer-mediated human-human interaction is the most high-profile phenomenon at the start of the 21st century. This can happen in an oral, visual, or written context or a combination of the three, between the learner and instructor, among the learners, and/or even between native speakers in the target language speaking countries and learners in their own countries. Wang (2004, p. 376) reviews the capacity of CMC in the provision of interaction in distance language education, and proposes a new taxonomy of interaction supported by CMC: written interaction, oral interaction, and oral-visual interaction.

Until the present, research in CMC for foreign language learning concentrates primarily on written interaction using Web-based tools such as e-mail, Internet Chat Relay, Moo, Webchat, and MSN. Interestingly, the potential of this type of interaction is often interpreted using theories pertaining to oral discourse in a face-to-face interaction, such as conversation analysis (e.g., Negretti, 1999; Kitade, 2000), and is regarded as a bridge to face-to-face interaction (e.g., Chun 1994; Kern 1995; Pellettieri 2000; Smith 2003; Sotillo 2000; Tudini, 2003).

CMC-based oral interaction can be achieved through the use of audio conferencing tools (e.g., I-phone and NetMeeting). The Open University developed its own Internet-based audio conferencing tool called Lyceum, which has been reported in a series of articles (see Hampel & Baber, 2003; Hampel & Hauck, 2004; Hauck & Haezewindt, 1999; Kötter, 2001; Kötter, Shield, & Stevens, 1999; Shield, Hauck, & Hewer, 2001).

Oral-visual interaction represents the highest level of CMC-based interaction at the present time. It offers an authentic learning environment, in which language learners can orally and visually interact with another human being in the target language much in the same ways as in face-to-face interaction. However, research on oral-visual interaction in CMC has only occupied a marginal status in CMC research. The few earlier videoconferencing projects such as The HIPERNET, LEVERAGE, and ReLaTe in the 1990s have contributed to our understanding of this form of interaction, but these projects often involve huge up-front expenses and on-going maintenance costs (for reports and reviews of these projects, see Buckett & Stringer, 1997; Buckett, Stringer, & Datta, 1999; McAndrew, Foubister, & Mayes, 1996; Wang, 2004; Wong & Fauverge, 1999). This research attempts to bridge this gap by finding a technologically and economically viable videoconferencing tool for the support of oral-visual interaction in DLE. The constant improvement in Internet products and bandwidth promises a worthwhile effort.

## THE IMPORTANCE OF ORAL-VISUAL INTERACTION TO DLE

The central debate in using videoconferencing at this point in time is probably whether video mediated interaction is necessary or whether audio mediated interaction itself is sufficient for task-based instructions. A review of the literature reveals a wealth of conflicting arguments, especially when CMC-based interaction becomes the focus of the debate.

Cognitively and linguistically, it is generally maintained that paralinguistic cues such as head nods and facial expressions reduce ambiguity in speech and improve understanding (see Bruce, 1996, for a review). Sproull and Kiesler (1986) present an even stronger argument that lack of nonverbal information reduces social cues and impairs interaction. Boyle, Anderson, & Newlands (1994) report that when performing a

collaborative task, subjects produced shorter exchanges of speech and less problematic dialogues when they could see each other, than when they could only hear each other.

In a CMC context, the multimodal (visual, audio, and textual) nature of this environment is often regarded as beneficial to negotiation of meaning (see Chun & Plass, 2000). At the same time, the issue of lack of body language and of depersonalization of communication in text- and audio-based CMC has been recognized by scholars such as Lecourt (1999), Kress & van Leeuwen (2001), and Hampel & Hauck (2004). The findings from Hampel & Hauck support the above arguments from a participant's point of view. They point out that when "tutors do not receive visual clues and body language, it is easier for students unsure of what is going on to sit quietly without participating and without getting help or encouragement" (p. 78).

From a sociocultural perspective, the impact of video on building a learning community, increasing confidence, and reducing isolation is also largely recognized in the literature (see Bloomfield, 2000; Hampel & Hauck, 2004; Lake, 1999; Stacey, 1999). These issues are especially typical of distance learners, who are physically isolated from one another, and video is perceived as being even more crucial in reducing the impact of the distance.

In contrast to this view, some scholars believe that there are no demonstrated advantages for video-mediated communication vis-à-vis audio-only interaction. For example, O'Malley, Langton, Anderson, Doherty-Sneddon, and Bruce (1996) conducted a series of experiments in which pairs of subjects performed collaborative tasks at a distance via video and audio links or audio links only. Their data indicate that "users of video links produced longer and more interrupted dialogues than those who had audio links only, although there were no differences in performance" and that "performance was affected when the video links were of low bandwidth, resulting in transmission delays" (p. 177).

These conflicting findings need to be further investigated through empirical studies. With the use of CMC in distance language learning, an important issue is whether the visual and non-verbal component should be sacrificed to compensate for the quality of oral interaction in view of the present constraints in Internet technologies.

## DEFINITION OF INTERNET-BASED DESKTOP VIDEOCONFERENCING

A clear definition of the technology under investigation is deemed necessary at the outset of this research as there is a variety of videoconferencing tools used in education. Broadly speaking, from a technical perspective, videoconferencing can be categorized into desktop and studio-based conferencing. Studio-based videoconferencing can be supported by the Internet or an intranet and often involves more complicated set ups and technology, such as a codec, a multipoint control unit, a studio, and a visualiser. In an educational setting, such videoconferencing is often designed to conduct lectures across campuses or institutions. Obviously the initial investment and on-going maintenance costs are huge. In contrast, desktop videoconferencing is a more economical option with minimum initial investment and no on-going maintenance as some (e.g., NetMeeting) can be freely downloaded from the Internet. This option is also more user-friendly and less place and time dependent as the learner can use it on his or her personal computer (PC) at home or work. Again, desktop videoconferencing can be Internet or intranet based. In an intranet environment data travel between LANs (Local Area Networks) with larger bandwidth and minimum latency. However, Internet-based videoconferencing uses the Internet as its major data carrier, in which data can be delayed due to Internet congestion and latency. Thus, bandwidth and latency are two major problems facing Internet-based videoconferencing. This study will concentrate on the effectiveness and efficiency of Internet-based desktop videoconferencing in the support of oral-visual interaction in DLE.

## THE EVALUATION OF NETMEETING

NetMeeting 3.01 is an Internet-based videoconferencing tool developed by Microsoft. It integrates audio, video and data conferencing into a single package (for more information on NetMeeting 3.01, see http://www.microsoft.com/windows/netmeeting/).

The evaluation of NetMeeting involved two stages. It must be pointed out at the outset that data presentation and discussion will concentrate heavily on the findings from Stage 2, the core stage of the evaluation, not only because Stage 1 was a preparatory and debugging phase, but also because Stage 2 was conducted with the distance language learners through the Internet. Data from Stage 1 will only be used as a point of comparison between the two stages in order to support findings from Stage 2.

### Summary of Results from the Stage 1 Evaluation

Stage 1 took place between November 2001 and February 2002 at Griffith University in Australia, via its Local Area Network (LAN) without using a modem (see Figure 1).

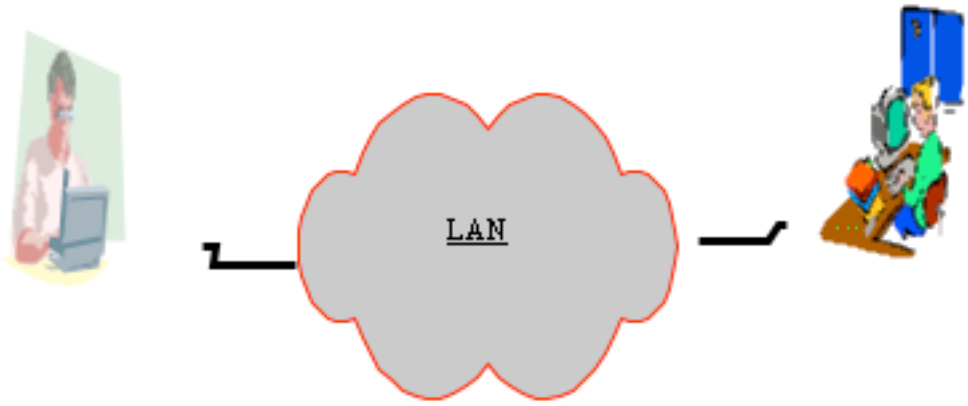



Figure 1.The intranet environment in Stage 1 of the evaluation of NetMeeting

The Intranet was chosen because it was easier to test and debug the technology in a controlled environment. A controlled environment is imperative when evaluating a new technology for teaching and learning purposes because such evaluation involves many unfamiliar factors. This is especially true when the investigation relies on the Internet, which has more variables and is often unpredictable. Another factor taken into consideration was the lack of on-site technical support for distance students.

In the intranet environment, NetMeeting proved to have reached a sufficiently high level of quality and sophistication to support one-to-one interaction in real time synchronous language learning. The most important finding was that both the video and audio were synchronized to a real time standard with clarity, consistency, and minimum delays. Such a high performance standard ensures the flow and authenticity of oral-visual interaction in a videoconferencing-supported learning environment. NetMeeting proved to be pedagogically valuable and mature with the integration of the Whiteboard, File Transfer, Sharing, and a self-image window. The Whiteboard was especially favored by the participants and its importance to language learning was strongly emphasized in the interviews and surveys. Furthermore, NetMeeting's user friendliness offers a relaxing environment for language learning. NetMeeting performed exceptionally reliably with a crash rate of zero. The extremely positive results from this stage have profound implications for the provision of oral-visual interaction to DLE. At the very least, they indicate the feasibility of moving to Stage 2 of the evaluation.

**Stage 2 Evaluation of NetMeeting**

***The Network Environments***

Stage 2 went through three network environments with the participants in various parts of Australia and the author at Griffith University in Australia.

***The Modem - Internet - Modem Environment***

In this environment, both the teacher and the participants had to dial into an ISP through a modem, as illustrated in Figure 2.


Figure 2. The modem - Internet - modem environment in Stage 2 of the evaluation of NetMeeting

***The LAN - Internet - Modem Environment***

On the teacher's side, the LAN was used to connect directly to the Internet without having to go through a modem, while the participants were still using the commercially available ISP via a modem, as demonstrated in Figure 3.


Figure 3. The LAN - Internet - modem environment in Stage 2 of the evaluation of NetMeeting

***The LAN - Internet - LAN Environment***

As shown in Figure 4, no modems were used in this environment.


Figure 4. The LAN - Internet - LAN environment in Stage 2 of the evaluation of NetMeeting

### Procedure

This stage of the evaluation witnessed the use of NetMeeting in a real distance language learning setting: videoconferencing in the target language (Chinese) between the distance language students and the author. Five videoconferencing sessions with specific tasks to improve students' speaking skills (such as a telephone conversation and a job interview) were designed specifically for this evaluation and scheduled for each participant, who was required to complete these tasks in an oral format. The length of each session ranged from one to one-and-a-half hours. Due to technical difficulties, some sessions had to be rescheduled to make up for the unsuccessful ones. Therefore a total of 29 tutorial sessions of NetMeeting was attempted in this stage, with 19 successful sessions and 10 incomplete ones. The participants are referred to here as Participants A, B C, D, and E. Participant C completed only three sessions and withdrew from the trial due to personal problems. Participant C did not complete the post-trial survey.

## RESULTS AND DISCUSSION

Findings and discussions are presented following the criteria developed by Wang (2004) which are summarized as follows:

1. user friendliness,
2. audio and video quality,
3. other features of pedagogical value,
4. reliability, and
5. cost.

### (1) User Friendliness

The main concerns in this criterion are the ease of installing a videoconferencing tool and the ease of use. Data presented here were obtained from two surveys -- a post-installation survey and a post-trial survey.

#### *Ease of Installation*

All participants set up NetMeeting following the instruction manual (see Appendix A) without requesting any assistance from the author. A brief post-installation survey was conducted. In regard to the level of difficulty of installation, participants' responses ranged from *very easy* to *difficult*. Table 1 summarizes the length of time for the installation by each participant:

Table 1. Survey on Installation in Stage 2 -- Length of Time for Setting Up NetMeeting

| Participant A | Participant B | Participant C | Participant D | Participant E |
|---|---|---|---|---|
| 1 hour | 1.5 hours | 1 hour | 20 minutes | A few weeks* |

* Participant E had a faulty Webcam that had to be replaced.

#### *Ease of Use*

The participants seemed to be very confident in operating NetMeeting during the sessions, thanks to the simple interface design (see Figure 5).

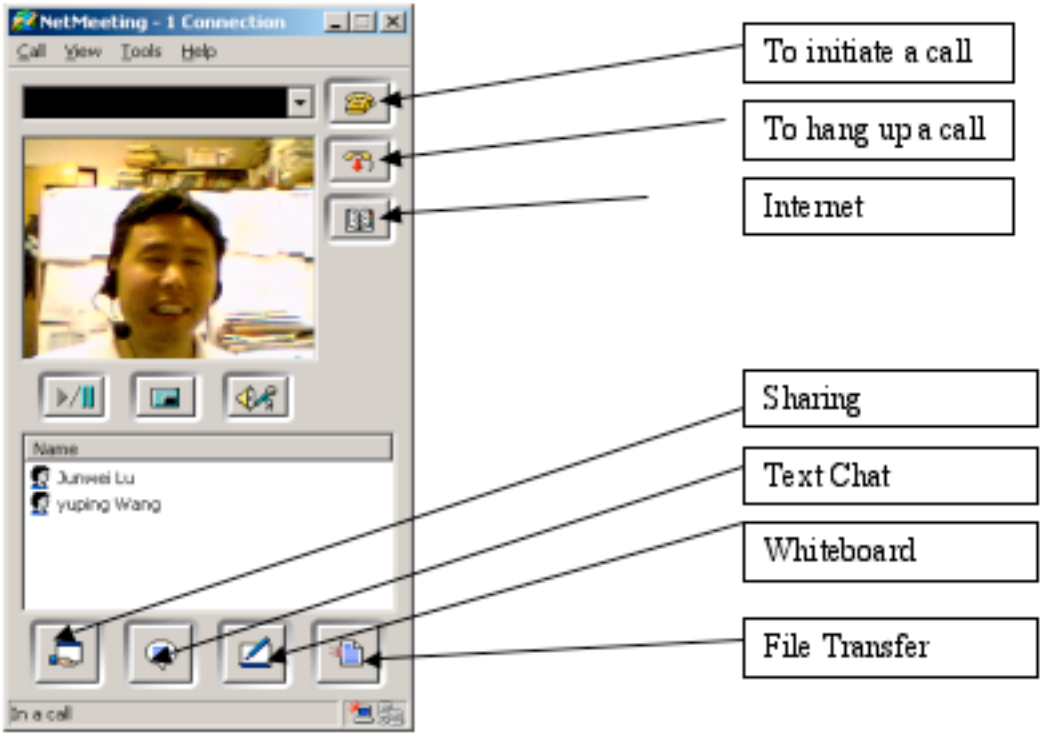



Figure 5. The interface of NetMeeting

In the post-trial survey, question PTS-2.12 asked the participants to rate the ease of use of NetMeeting on a 10-point scale. Most of the choices concentrated on the *very easy* end of the scale with choices of 1, 3, and 4, with the exception of Participant D, who chose 5 (see Appendix B, PTS-2.12; participant D encountered great difficulties in the initial connections due to problems unrelated to NetMeeting itself, e.g., a firewall and faulty headphones). Participant A commented on her choice by saying that NetMeeting "was very easy to use, as the program is user friendly, and simple to follow" (see Appendix B, PTS-2.12).

In conclusion, although the participants only had a basic level of computer literacy, all were able to set up NetMeeting. As expected, some students found it easier and others found it less easy, depending on the individual student's computer skills and knowledge. The user friendliness of NetMeeting was firmly established in both the trials with the on-campus and Open Learning participants.

**(2) The Audio and Video Quality**

Data are presented and discussed separately on each of the three network environments so that a precise account of what happened in each environment can be depicted and discussed.

***Audio Quality in the Modem - Internet - Modem Environment***

**Personal Observation.** In theory, a reduction in the audio and video quality of the conferences can be expected when dialling up through a modem because data can be further bottlenecked and more latency can be experienced. This assumption was proven to be true in this stage of the evaluation.

A total of 9 of the 29 sessions was conducted in this network environment. On average, the sound quality was generally clear and continuous enough for accomplishing the planned tasks, if the timing of the sessions was right. However, it was still not as good as that in an Intranet environment, and a delay in lip synchronization was more noticeable than in an Intranet situation, but not prominent enough to interrupt the general flow of the interaction. A major issue in the sound quality was its instability. In some sessions,

the sound quality was quite similar to that in an Intranet environment, but in others the sound was unreliable -- sometimes clear and continuous and sometimes jammed and lost. It was discovered that early in the morning (before 8:00am) and weekends were the best times for videoconferencing sessions. Other times the sound could be stuck for one or two seconds, resulting in a loss of words or unintelligible sounds with echoing.

**Participants' Perceptions.** Participants' perceptions correspond largely to my observations -- the sound was clear enough for successful interaction in the target language but unstable at times (see Table 2).

Table 2. Results From the Post-Session Interviews in Stage 2: Participants' Responses Regarding the Sound Quality in the Modem - Internet - Modem Environment.

| Session | Participant | | |
|---|---|---|---|
| | A | B | C |
| 1 | WED 5:00-6:00pm<br>Sometimes it was really good, sometimes it broke into little segments. | SAT 6:50-7:20pm<br>Good | SUN 10:00-11:30am<br>Very good and continuous with only a few occasions when the sound got stuck. |
| 2 | WED 5:00-6:00pm<br>A lot better first but became a bit fuzzy towards the end. On the whole, a little bit better. | WED 8:25-9:20pm<br>Very bad, disconcerting, distracting. | SAT 10:00-11:00am<br>When it's running alright, very clear, but getting worse towards later in the morning. |
| 3 | | SAT 10:30-12:00pm<br>Good, definitely better than the previous session. | |
| 4 | | WED 7:30-8:30pm<br>Quite good, better than last session at the start, but broken up a bit at the end. | |
| 5 | | SAT 9:30-11:00am<br>Very good, the best out of the five sessions | |

Note: Participants' feedback was only solicited on the successful sessions in the modem - Internet - modem environment.

The following transcript of the post-session interview at the end of Session 5 provides a more detailed account of the participants' perceptions of the sound quality. This session was conducted 9:30-11:00am on a Saturday.

Participant B: It was quite good until the end, it started to sort of break up a little bit.
R: […] So at first it was ok, was it?
Participant B: Yeah, it was quite good actually.
R: […] So compared with the last session, was it getting better or worse? Or the same?
Participant B: I remember our last session was not too bad either. I think the quality, if anything, was a bit better early on. […]
R: Was it good enough for learning Chinese?
Participant B: Yeah.

To summarize, while timing was never an issue in Stage 1 in the Intranet environment, with no noticeable difference in audio quality between different times of the day, in the Internet environment, timing became a crucial factor. Internet conditions such as bandwidth and latency became decisive. In other words, the

success of each session relied heavily on the Internet traffic conditions at the time of the session. Such a constraint on time may have an adverse implication for the actual implementation of videoconferencing as Internet off-peak time may mean that both the teacher and the learner would have to work at a time which may not be convenient to them.

***Audio Quality in the LAN - Internet - Modem Environment***

**Personal Observation.** Of the 29 attempted sessions, 13 were carried out in this environment with 5 successful sessions. Eight sessions failed not because of this environment or NetMeeting, but because of such problems as a firewall and faulty equipment. In this network environment, a faster transmission was experienced on the teacher's side resulting in clearer and more continuous sound.

**Participants' Perceptions.** In contrast to the improvement experienced by the author, the participants' perceptions of the sound quality were mixed (see Table 3).

Table 3. Results From the Post-Session Interviews in Stage 2: Participants' Responses Regarding the Sound Quality in the LAN - Internet - Modem Environment

| Session | Participant | | |
|---|---|---|---|
| | A | B | C |
| 1 | | | |
| 2 | | | |
| 3 | Really bad for about 20 seconds in the beginning, but for the majority of the lesson, it was very good. | Really good and clear. Better than before. | |
| 4 | Very good, but a little bit worse than normal. | | |
| 5 | Good, same as the last session. | | Quite good<br>It crackled a bit. A little bit delayed. |

Note: Participants' feedback was only solicited on the successful sessions in the LAN-Internet-modem environment.

Table 3 indicates that Participant A did not notice an obvious improvement on her side when commenting on the sound quality of Sessions 3, 4, and 5. In contrast, Participant C observed better sound quality even at 3:00 on a Friday afternoon, a comparatively busy Internet time, compared with her two previous sessions on weekends.

The difference between the sound quality experienced by Participants A and C may be caused by the different quality of the sound cards on their computers. The improved sound quality on my side indicates the importance of a broader bandwidth for quality videoconferencing.

***Audio Quality in the LAN - Internet - LAN environment***

**Personal Observation.** In such an environment, with the exception of the Internet section in the middle, data travelled through a much wider bandwidth (LAN) at both the teacher's and the participant's ends without using a modem. The seven sessions with Participant E were conducted in this environment on weekdays between 2:00pm and 6:00pm, a peak period for Internet traffic. Of seven sessions, two failed because of the existence of a firewall in her school's ISP. During the two failed sessions, I could see and hear her with the best clarity among all the sessions in this stage of the trial. Unfortunately, she could not hear and see me. To avoid the firewall, Participant E had to use the computer lab at another university. It was observed that the audio, on my side, was consistently clear and continuous with delays less than one second, similar to the sound quality in the intranet. In fact, I had the best audio quality of the 19

successful sessions. My observation suggests that the audio quality was not much affected by Internet traffic when using a LAN - Internet - LAN connection, even at peak Internet times.

**Participant's perceptions.** Contrary to my expectation, the sound quality on the Participant's side was not reported to be as good as it should be (see Table 4).

Table 4. Results From the Post-Session Interviews in Stage 2: Participant's Responses Regarding the Sound Quality in the LAN - Internet - LAN Environment

| Participant | Session 1 | Session 2 | Session 3 | Session 4 | Session 5 |
|---|---|---|---|---|---|
| E | Good, but with crackly interference. | Not so good. Fading in and out. | Much better than the previous two sessions. | Sometimes it was good, sometimes it was worse. Second best . | Same as Session 4. |

Note: Participants' feedback was only solicited about the successful sessions.

The following excerpt from the post-session interview at the completion of Session 4 further explains the participant's perception of the sound quality.

Participant E: Ok. Well it wasn't wonderful quality.

R: So you heard some crackling sound?

Participant E: I did.

R: Apart from that, what else did you ...

Participant E: Apart from that, it wasn't bad. It was, the major thing that happens is when you are saying a sentence, I get crackles that have the effect of stopping me from hearing a few of the words in the sentence.

[…]

Participant E: …. But sometimes it's good, sometimes it's worse. It varies a lot in the course.

The computing power of her laptop may have been a determining factor affecting the audio quality, because many functions of laptops are compressed, limiting their power to support good audio or video quality.

To summarize the findings in relation to audio quality in the three network environments, the best audio quality was achieved in the LAN-Internet-LAN environment and the most uncontrollable environment was the modem-Internet-modem. The main problem in sound quality lies in its instability. However, 19 videoconferencing sessions with the prescribed tasks were successfully completed and the participants were all very positive about the potential of videoconferencing in supporting oral-visual interaction in DLE. In particular, the high quality sound in the LAN-Internet-LAN environment indicates the immense potential of videoconferencing tools once the Internet bandwidth is improved.

***The Video Quality in the Modem - Internet - Modem Environment***

**Personal Observation.** The video was mainly used by both parties to assist interaction during task completion, through observing each other's facial expressions and body movements above the shoulders, and demonstrating items to the other party, much like face-to-face interaction. For example, through the video, the author demonstrated how to pronounce certain words or how to position the tongue when pronouncing a word. The video on the teacher's side, though not as clear as in the Intranet environment and often more delayed, was usually continuous and presented paralinguistic cues accurately and with hardly any delay. Signs of comprehension, frustration, nervousness, and enjoyment were all evident in

real time. Delays in transmission were not as obvious during continuous speech but became noticeable during turn taking, sometimes causing start up collisions or false starts. A major problem with the video was the freezing of images caused either by congested Internet traffic or the limited capacity of participants' computers. The length of the freezing varied from 1 second to 10 seconds with the exception of Session 2, in which the image of Participant B was frozen for the entire session.

**Participants' Prceptions.** Again, the perceptions of the video quality varied from participant to participant and from session to session, although the participants were generally positive as far as the pedagogical values of the video were concerned (See Table 5).

Table 5. Results From the Post-Session Interviews in Stage 2: Participants' Responses Regarding the Video Quality in the Modem - Internet - Modem Environment.

| Session | Participant | | |
|---|---|---|---|
| | A | B | C |
| 1 | Ok. Sometimes there was a delay. | Quite good. | Good. |
| 2 | Good.<br>Better than last session with fewer delays and less freezing. | Better than last session. | Most of the time, it's very good. |
| 3 | | Quite good. | |
| 4 | | Very good at the beginning but the image broke up a bit towards the end of the session. | |
| 5 | | Very good. | |

Note: Participants' feedback was only solicited on the successful sessions in the modem - Internet - modem environment.

When asked to compare the video quality in Session 3 (which he said was quite good) and Session 4, Participant B offered the following comments:

| | |
|---|---|
| Participant B: | It [Session 4] was better actually initially, and again towards the end, I guess the Net gets busier, it started to sort of you know break up the image. But in, in the beginning, it was very good, very good quality I feel. |
| R: | So when I showed you how to write the character with my finger, could you see it clearly? |
| Participant B: | Yes. |
| R: | Good enough for learning Chinese? |
| Participant B: | Yes, definitely. |

Again, although the video quality was not ideal in this environment, all participants perceived it to be adequate for language learning.

***Video Quality in LAN - Internet - Modem***

**Personal Observation.** Similar to the sound quality, the video quality was noticeably better on the author's side with clearer and more continuous images and less delays.

**Participants' Perceptions.** Again, the participants offered diverse opinions on the improvement of the video quality (see Table 6).

Table 6. Results From the Post-Session Interviews in Stage 2 -- Participants' Responses Regarding the Video Quality in the LAN - Internet - Modem Environment

| Session | Participant | | |
|---|---|---|---|
| | A | C | D |
| 1 | | | |
| 2 | | | |
| 3 | Fine. It was probably better than previous sessions. Quite continuous. | Very good. Much better than the last session. | |
| 4 | Good. A few little delays. A little bit worse than previous sessions. | | |
| 5 | Good. Just a delay in the first 20 seconds. | | Very good. Sometimes it froze for half a second. |

Note: Participants' feedback was only solicited on the successful sessions in the LAN-Internet-modem environment.

Participant C also verified the capability of the video in supporting distance language learning by saying that she could see the movements of my lips and so on when she needed to.

***Video Quality in LAN - Internet - LAN***

**Personal Observations.** On my side, I enjoyed the highest and most consistent quality of the video among the sessions with the distance participants, similar to that in the Intranet environment with the on-campus students. The video was synchronized with good clarity, high resolution, and continuity throughout all the sessions in this network environment.

**Participants' Perceptions.** However, the video quality on the participants' side was not reported to be as satisfactory. In comparison with the feedback from other participants, Participant E seemed to have experienced the worst video quality (see Table 7).

Table 7. Results From the Post-Session Interviews in Stage 2: Participant's Responses Regarding the Video Quality in the LAN - Internet - LAN Environment

| Participant | Session 1 | Session 2 | Session 3 | Session 4 | Session 5 |
|---|---|---|---|---|---|
| E | Very good, but could not see facial expressions clearly. | Not clear at all. Blurred and pixilated but continuous. | A bit better than last session but still blurred and pixilated. Occasionally clear. | Similar to the previous session, still blurred and pixilated. | Sometimes clear but blurred 55% of the time. |

Participant E further commented at the completion of Session 3:

> It [the video quality], it still wasn't good. It's still I call pixelated. Sometimes it's clear and I can see quite well. I could see that you had your hair tied back today, and you had black and white on. But a lot of times it was still not that clear. Not as clear as I see myself in that corner box [the "My Video" window].

This poor video quality on the participant's side was probably caused by the lower processing power of her laptop. Thus a powerful desktop computer can be a crucial factor in supporting a quality video image.

In summary, despite the fact that the video quality in the three network environments varied from one another, it was observed and perceived to have reached a satisfactory level of performance for distance

language learning. The distance group highly valued the visual contact facilitated by videoconferencing. Consequently they were more receptive of the video quality than the on-campus group. It was observed that the distance participants were genuinely delighted to see me, especially on the first occasion, and they watched the video much more constantly than the on-campus students. All of them believed that the video was very important in reducing their sense of isolation and increasing their confidence in learning. After confirming the quality of the video for learning Chinese, Participant A commented that "it's good to see facial expressions" and "have that facial contact."

**(3) Other Features of Pedagogical Value**

Under discussion here are features of NetMeeting other than its video and audio functions. This includes features such as the Whiteboard, Sharing, File Transfer, and My Video. As I discusses their pedagogical values in detail elsewhere (Wang, 2004), this article will concentrate on the problems encountered in this stage given the understanding that both the on-campus and distance participants unanimously confirmed the pedagogical values of these features.

***The Whiteboard***

The on-screen Whiteboard is a pedagogically valuable feature offered by NetMeeting, which was mostly used in this trial for character writing, linguistic explanations, and showing directions during task completions (see Figure 6). It was perceived by all participants to be of great importance to language learning. It was used frequently in each session and often activated by the participants.

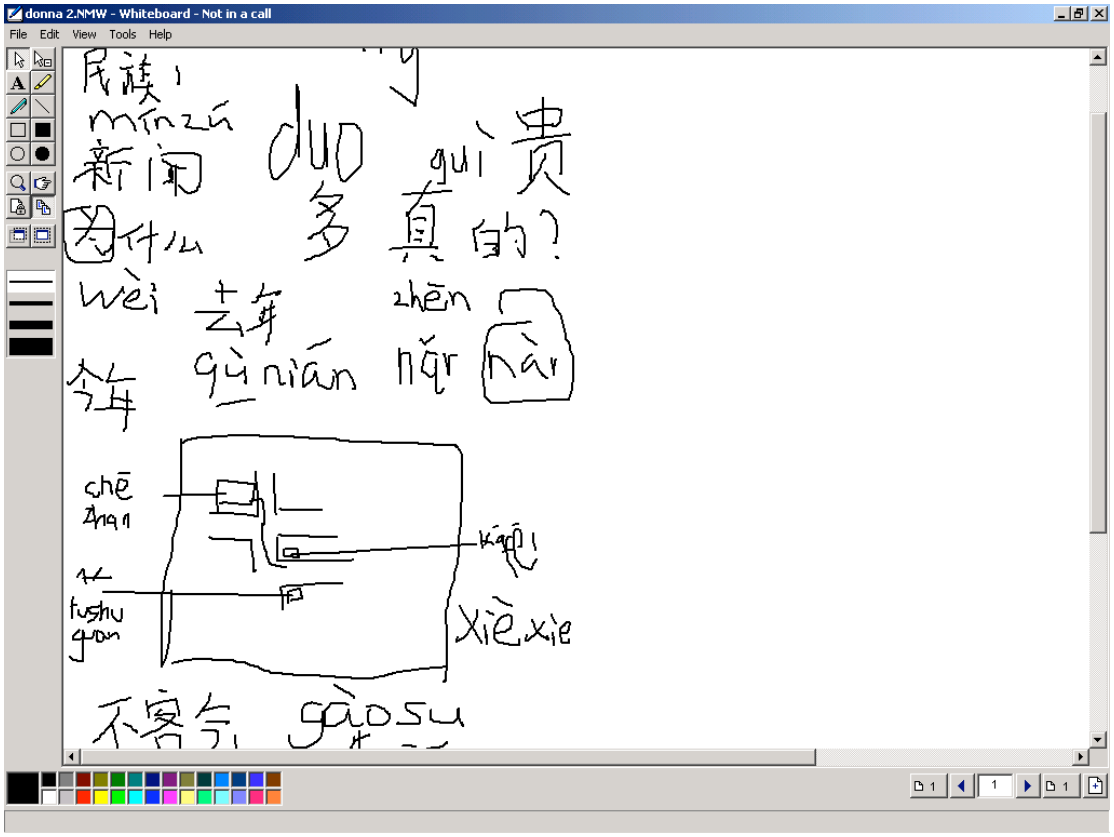



Figure 6. Whiteboard contents in Session 2 with Participant A

It was generally reliable with only two crashes. One crash happened when, as soon as the Whiteboard was clicked on, NetMeeting crashed. Another happened when the two parties were moving the Whiteboard at the same time. In one session, the Whiteboard could not be started at all. These problems had never happened in Stage 1, and may have been caused by the low capacity of the participants' computers.

### *Sharing*

The Sharing function enables the users to share with other parties multiple programs opened on the computer desktop during a NetMeeting conference. For the NetMeeting sessions under discussion, it was planned to use this feature for two purposes: to share a menu and to view a digital personal photo during task completion. With some participants, the sharing of the menu (a 32 kB Word document) appeared on the participants' screen almost instantly with excellent quality. With others, it took somewhat longer to share a document. For example, it took about one minute to load onto Participant B's computer screen. However, the photo (240 kB) could not be shared successfully and only a frame of the photo could be seen on the participant's screen. This failure may have been caused by the slow Internet transmission or the limited capacity of the participant's computer because in Stage 1 in the Intranet environment the sharing of the same documents was instant with the same quality as in the original documents. To rectify this situation, the photo was replaced by a family photo of a much smaller size (32KB) and was shared with the participants with success. Thus in the Internet environment, the success of sharing a document largely depends on the Internet traffic conditions, the size of the document and the capacity of the other party's computer. In other words, the bigger the document is, the more the bandwidth it will take and the slower the transmission will be. It is thus recommended that small sized documents be used for effective document sharing.

### *File Transfer*

Unlike in the function Sharing, documents sent through File Transfer can be viewed on the spot or kept by the other party for future reference. The use of this function was planned for two occasions for each participant -- the transfer of a video clip with a speech in Chinese and transfer of a word document. It was the same 2.41MB video clip, which was transferred instantly in Stage 1. However, in this phase of the evaluation the size of the video clip was too large for the Internet to transfer within a reasonable time frame. For example, in one session, the transfer was still going when the session concluded. To further test the function of File Transfer, a digital family photo of 32KB was transferred through this function to the participant and the transfer was found to be much quicker, varying from one to three minutes. Thus it can be concluded that this function was useful for transferring small sized documents, be it a Word document or a photo. Similar to Sharing, its transmission speed was subject to the Internet traffic conditions, latency, and the individual's computer power.

### *My Video*

My Video is a picture-in-picture self-image window on the computer screen where one can see oneself while watching the video of the other party. This function was utilized constantly in every session to ensure that my image on the other side of the conference was still on the screen and, more importantly, to adjust paralinguistic cues to assist the flow of interaction and negotiation of meaning. For example, a quick glance at the My Video image of myself would remind me of the appropriate expression needed for encouraging participants to produce output. Participant A also used it to adjust the photos she wanted to show the teacher through the Webcam. Furthermore, the function of My Video is also an important source of information when using a recording device (e.g., Camtasia) to capture the screen activities of both parties.

### (4) Reliability

Reliability here refers to the stability of NetMeeting in terms of its crash rate during a videoconferencing session. Wang (2004) maintains that "more than one crash during a videoconferencing session will deter students from using it" (p. 383). The reliability of NetMeeting had been established in Stage 1 in the intranet environment, where NetMeeting never crashed. However, in Stage 2, NetMeeting crashed 5 times among the 19 successful sessions, resulting in an average of 0.26 crashes per session. One of the crashes happened in Session 4, when Participant E attempted to enlarge her video size. This action exceeded the

capacity of her laptop and caused the crash. In Session 3, when Participant B tried to use My Video while I was clicking on the Whiteboard, NetMeeting froze. Despite these crashes, participants, except Participant D, who encountered a number of problems such as a firewall and faulty equipment, were all very positive about the reliability of NetMeeting (see Appendix B, PTS-2.4). Although the issue of reliability only concerns the stability of NetMeeting, the examination of the causes for these crashes led this investigation to the discovery of factors other than NetMeeting itself, factors such as the participants' limited computer power and a congested Internet transmission. In other words, the NetMeeting program itself is reliable, but when used in an Internet environment, its reliability may be affected by factors other than those in the program itself.

***(5) Cost***

The issue of cost has been discussed by Wang (2004). To summarize, NetMeeting is freely downloadable from the Internet, and the only cost involved is the purchase of a Webcam (approximately US$50) and the fee for an Internet connection. This research recognizes that the issue of affordability is of no less importance than technological and pedagogical issues in distance language learning. In fact, affordability is the foundation of any innovative attempt in teaching. Internet-based desktop videoconferencing offers a low-cost alternative in comparison to studio-based videoconferencing.

## SUMMARY

This stage of the evaluation reveals that Internet bandwidth and latency are two critical factors affecting the consistency and reliability of audio and videoconferencing. The limitation of Internet bandwidth has long been recognized as a major detrimental factor affecting videoconferencing (see Buckett & Stringer, 1999; Chou, 2001; Kötter, et al. 1999; McAndrew et al., 1996; Wong & Fauverge, 1999). Results from this research show that, with the present generation of the Internet bandwidth, choosing a less congested Internet time was crucial to the success of videoconferencing sessions. Presently, Internet bandwidth can only comfortably accommodate one-to-one videoconferencing, while many-to-many videoconferencing requires more complicated Internet technologies. Moreover, the findings from this research also direct our attention to the existence and impact of communication latency. Communication latency is the time interval for a message to travel from the source machine to the destination machine.

Having discussed these problems, I do not suggest that language professionals wait for the improvement of the technology. Rather, language professionals should be informed of these problems and work to maximize the potential of videoconferencing and minimize the effect of the bandwidth and latency. Fortunately, with the rapid development in computer technology, more advanced videoconferencing tools, improved Internet bandwidth, and reduced latency will be a reality in the near future.

## RECOMMENDATIONS FOR EMPLOYING INTERNET-BASED DESKTOP VIDEOCONFERENCING TOOLS IN DISTANCE LANGUAGE LEARNING

During the course of this evaluation, a number of issues emerged that can be valuable references for future users or researchers of Internet-based desktop videoconferencing tools.

1. An appropriate timetable needs to be negotiated with the learner in order to avoid Internet congestion. Early mornings before eight o'clock or weekends appear to be better times for videoconferencing.
2. To receive the best audio quality, it is suggested that users wear headphones instead of using the speakers of the computer. The use of speakers can produce feedback and echoes of one's own voice, thus frustrating the other party.
3. If the Webcam has been used (e.g., to take a photo, to make a video clip) before videoconferencing, it often takes the video away from NetMeeting. Restarting the computer before NetMeeting sessions will reconfigure the video to NetMeeting.

4. It is also recommended that too many or too quick movements in front of the Webcam be avoided because the video image may become blurred.
5. Future researchers should be aware of the issue of firewalls when using a LAN or ISP to connect to the Internet. Institutions or ISPs may erect firewalls in their network to block videoconferencing for security reasons or in order to reduce cost.
6. Last but not least, before using NetMeeting, it is recommended that other applications on the desktop be closed in order to save computer power for running NetMeeting. Too many applications will take up too much computer power resulting in poor video and sound quality, slow program response, or even crashes of NetMeeting or its functions.
7. Derived from the positive findings of this research are a number of implications for the design of a distance language-learning program with oral-visual interaction as its component. Although the distance Chinese language program at Griffith University was employed as a case study, NetMeeting can be used to facilitate oral-visual interaction by any other distance language learning program because it is a generic tool.

Firstly, it is proposed that the use of videoconferencing be incorporated into the course as an assessable item. This is to avoid the pitfall that learners treat it as peripheral. For example, assessable speaking tasks can be designed in such a way that they require the use of videoconferencing tools to cooperate and communicate among learners. Advanced learners can be encouraged to use videoconferencing to complete role-plays and so forth among themselves or with a native speaker on a regular basis. Students can videotape their videoconferencing activities and send the videotapes to the instructor for grading. At the same time, videoconferencing can help the distance learners build a learning community, an essential social environment for effective language learning.

Videoconferencing tools can also be employed to provide regular speaking tutorials similar to the sessions conducted in this research when the number of students is not too large. Tasks with clearly established and achievable goals for each videoconferencing session should be set beforehand and carried out in these tutorials.

Moreover, one-to-one videoconferencing can add a new dimension to distance language testing in that speaking tests can be conducted in real time through NetMeetinig. More authentic and cheating-proof than the telephone, videoconferencing supports interaction between the student and instructor in much the same way as in face-to-face interaction. However, the occasionally inconsistent audio and video quality should be taken into consideration when grading students' performance.

Videoconferencing-based student consultation can be a more academically and economically viable option compared with telephone consultation. Instead of picking up a phone, the student can invite their teacher online to answer their questions more effectively with built-in conferencing functions such as the Whiteboard, Sharing, and File Transfer.

However, videoconferencing is only one of the tools to provide oral-visual interaction in distance education. It thus should be used in combination with other forms of technologies and methods to promote maximum language learning, as Kaye (1989) points out,

> These technologies [CMC and other on-line services] should not be considered as a substitute for existing media and methods which have already proved their worth for distance education. CMC will not in every case replace teachers, texts, telephone tuition, or residential seminars -- for the majority of learners it will complement these earlier technologies, and in so doing vastly enrich the distance education experience. (p. 9)

## CONCLUSION

The two-stage evaluation of NetMeeting yielded a wealth of data strongly supporting the use of videoconferencing in DLE for the provision of oral-visual interaction. This evaluation of NetMeeting contributes, in many ways, to our understanding of the capabilities of the present generation of Internet-based desktop videoconferencing. The ease of installation and use makes NetMeeting a user-friendly videoconferencing tool, a merit that was unanimously agreed upon by both the on-campus and distance participants. While acknowledging three major constraints (Internet bandwidth, latency, and the computing power of the individual PC) on the quality of a videoconference, this research has successfully confirmed the capability of NetMeeting in providing reliable and acceptable audio and video quality. This finding is a major contribution of this research to the study of Internet-based desktop videoconferencing because without good audio and video quality, videoconferencing would be impossible. Video has been greatly appreciated by the distance participants and its pedagogical values are indispensable to language learning at a distance. Particularly significant is the high performance standard of NetMeeting in the LAN-Internet-LAN environment, which indicates that with improved Internet bandwidth, quality videoconferences at a distance will be easily attainable.

In contrast to some commercially available videoconferencing tools (see Wang, 2004, for an evaluation of some other videoconferencing tools), NetMeeting lends itself well to supporting interactive distance language learning by offering features of great pedagogical value such as the Whiteboard, Sharing, and File Transfer. As far as its reliability is concerned, NetMeeting itself proved to be reliable despite the fact that the Internet could pose potential problems due to limited bandwidth and latency. In addition, the fact the NetMeeting can be freely downloaded from the Internet and that there is no maintenance cost involved effectively reduces the cost to both educational institutions and the learner, making it a more economically viable and sustainable option. Even though the length of this article does not allow a detailed discussion of the learning outcomes of the participants, data from the evaluation of NetMeeting have confirmed the potential of videoconferencing in supporting interactive and communicative language learning at a distance. Many specific pedagogical issues have emerged during this research and need to be investigated in the future, issues such as videoconferencing-based learning task design, performance and evaluation, and the positive impact of the video and videoconferencing on distance language learners' confidence building and acquisition of communicative competence.

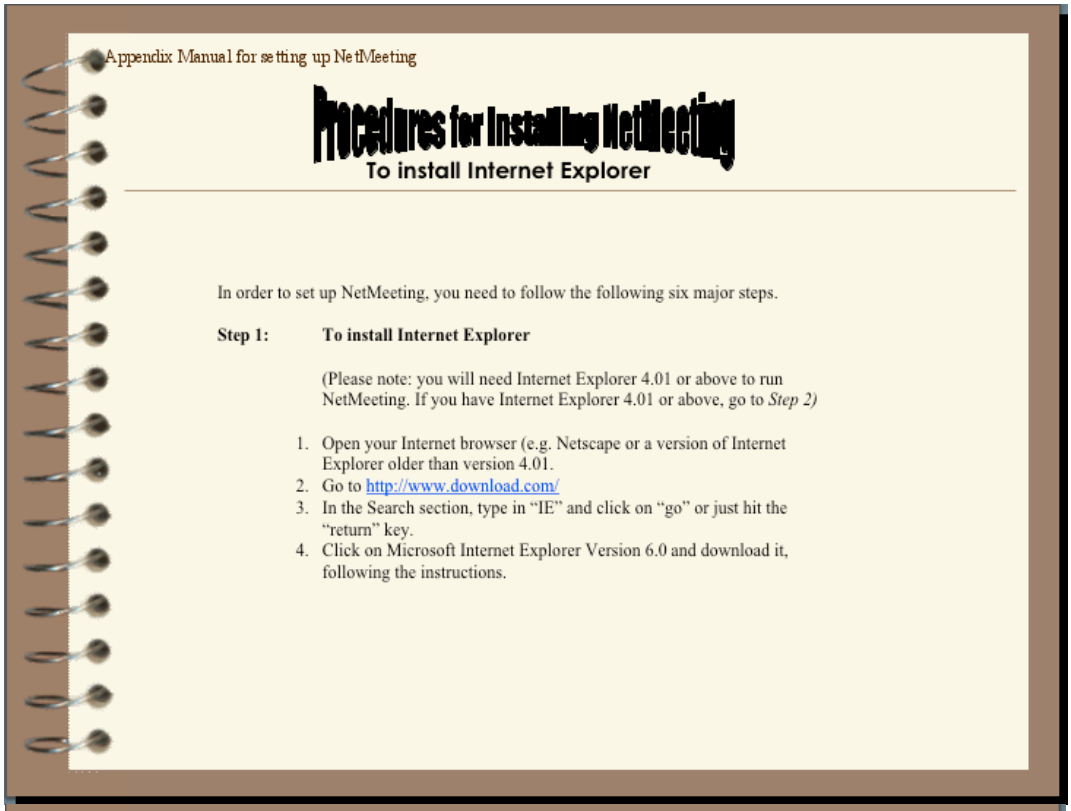
The issue of obsolescence of technology was recognized early in this research. However, the scope of this research only allows for the examination of the capabilities of one videoconferencing tool. NetMeeting was selected not only for its state-of-the art quality and capability, but also because it represents the future of the technology of its kind. In fact, the basic technology of all desktop videoconferencing tools is quite similar. The differences lie primarily in the video and audio quality, interface design, and built-in features such as File Transfer, the Whiteboard, and Sharing. The author acknowledges the possibility that more advanced desktop videoconferencing tools might be emerging to replace NetMeeting. However, the basic characteristics and capabilities of videoconferencing tools discussed here should still be applicable. More importantly, there is a crucial pedagogical concern at the heart of this research, that is, for distance language professionals to be open to the use of whatever technology available to maximize the level and quality of oral-visual interaction, and in so doing, create a more effective and efficient learning environment for distance language learners. Although the technology is changing rapidly, the larger pedagogical issue contained in this research is unlimited and beyond obsolescence.

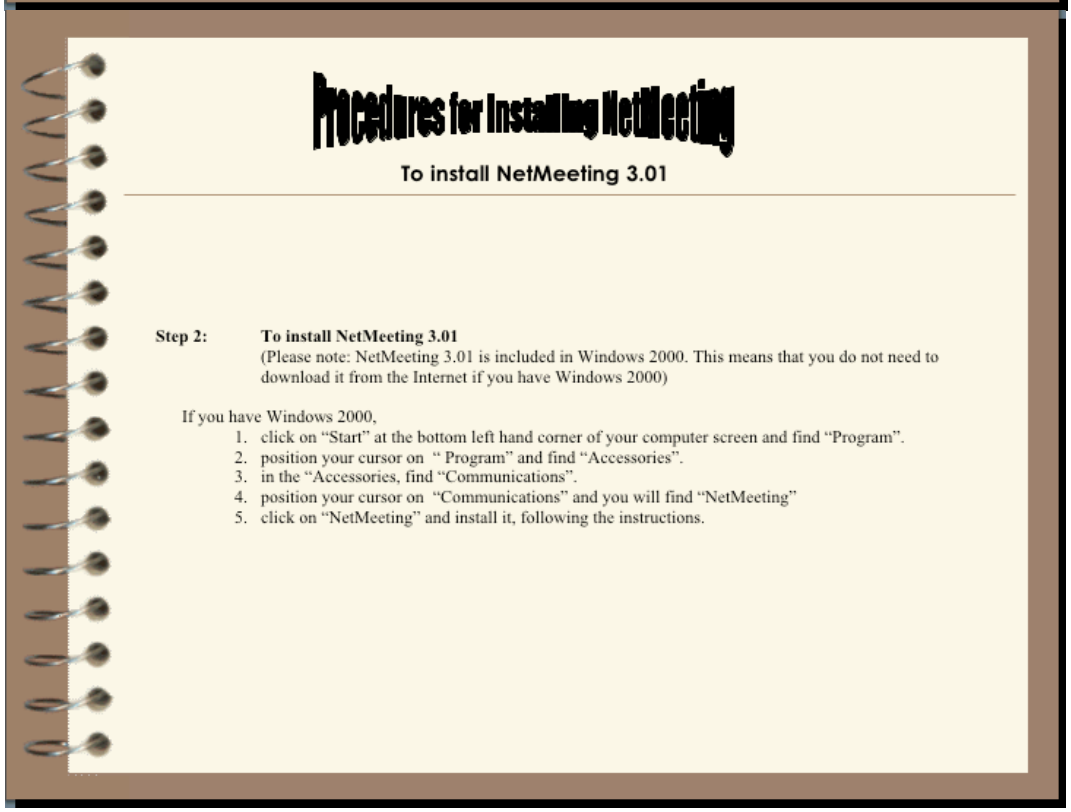
In summary, this research has addressed a real need in distance language learning: providing oral-visual interaction. Despite the relatively small number of participants, through 34 videoconferencing sessions, this research has examined the capabilities of videoconferencing and participants' perceptions of this new medium. Abundant data have been collected to establish that the present generation of Internet based desktop videoconferencing tools will emerge as a cost-effective solution to the problem of lack of oral-

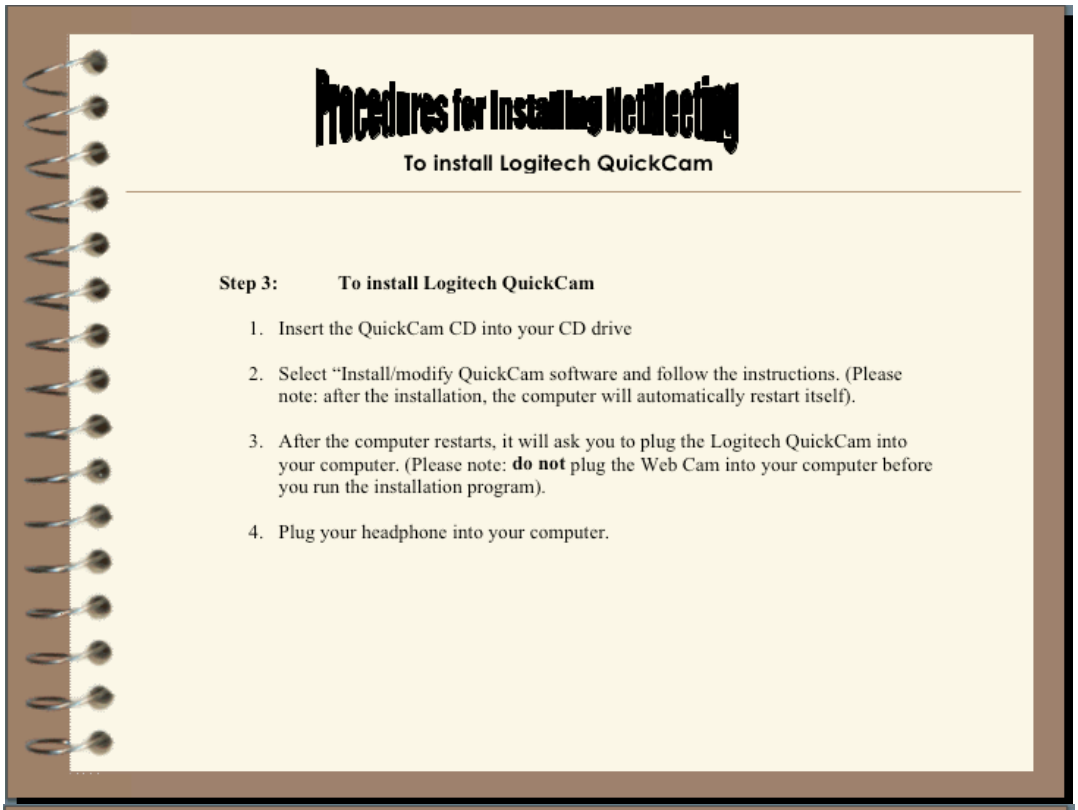
visual interaction in distance language learning, and that videoconferencing was extremely well received by the distance participants. With the employment of videoconferencing tools, distance language learning can be transformed from asynchronous and non-real time to orally and visually synchronous and real time. It is not an exaggeration to say that Internet-based real time technology is changing distance education quantitatively as well as qualitatively, and this research represents only the beginning of the important effort to make distance language learning a more effective endeavor.

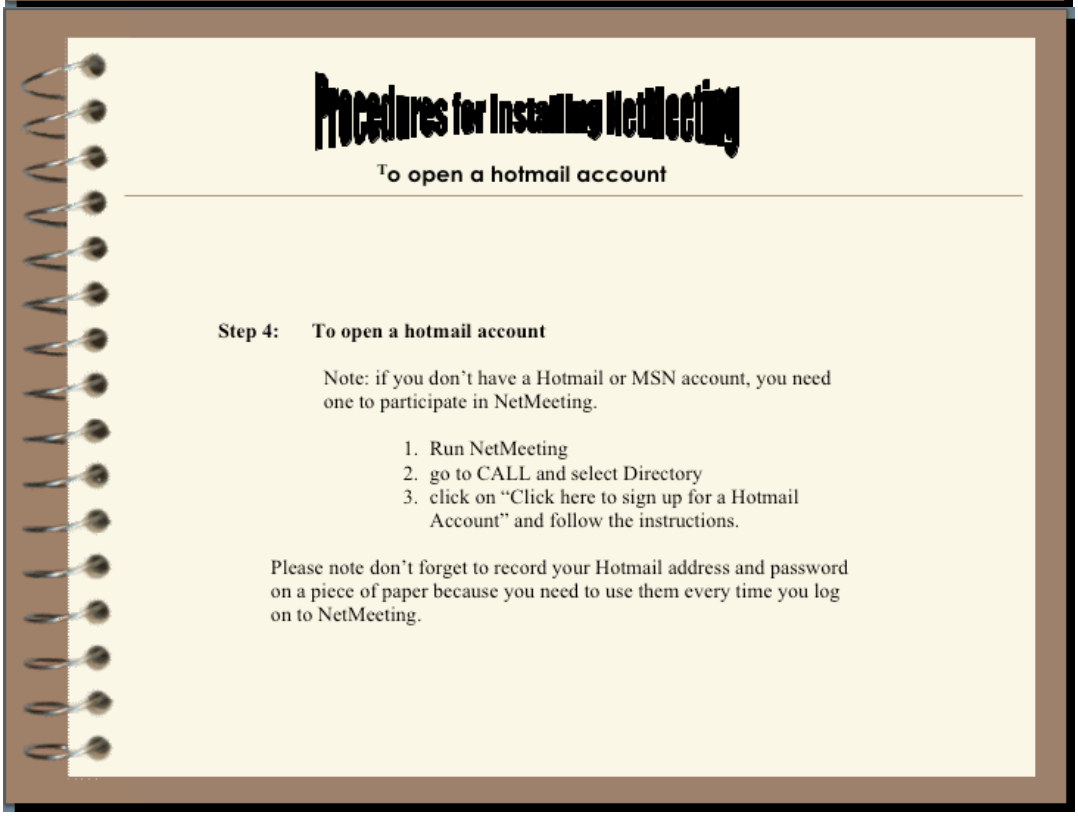
To the knowledge of this author, there has been no empirical report in the literature which evaluates the use of NetMeeting in the context of DLE. Findings from this research have therefore extended our knowledge of the capabilities of Internet-based desktop videoconferencing tools and broadened our horizons by opening up new possibilities for interactive language learning at a distance. Another major significance of this study lies in its confirmation that the technology is in place and capable, and is improving with the advancement of Internet technology. It is hoped that this research will provoke a change in thinking that language professionals should utilize what is available to maximize the potential of distance language learning.

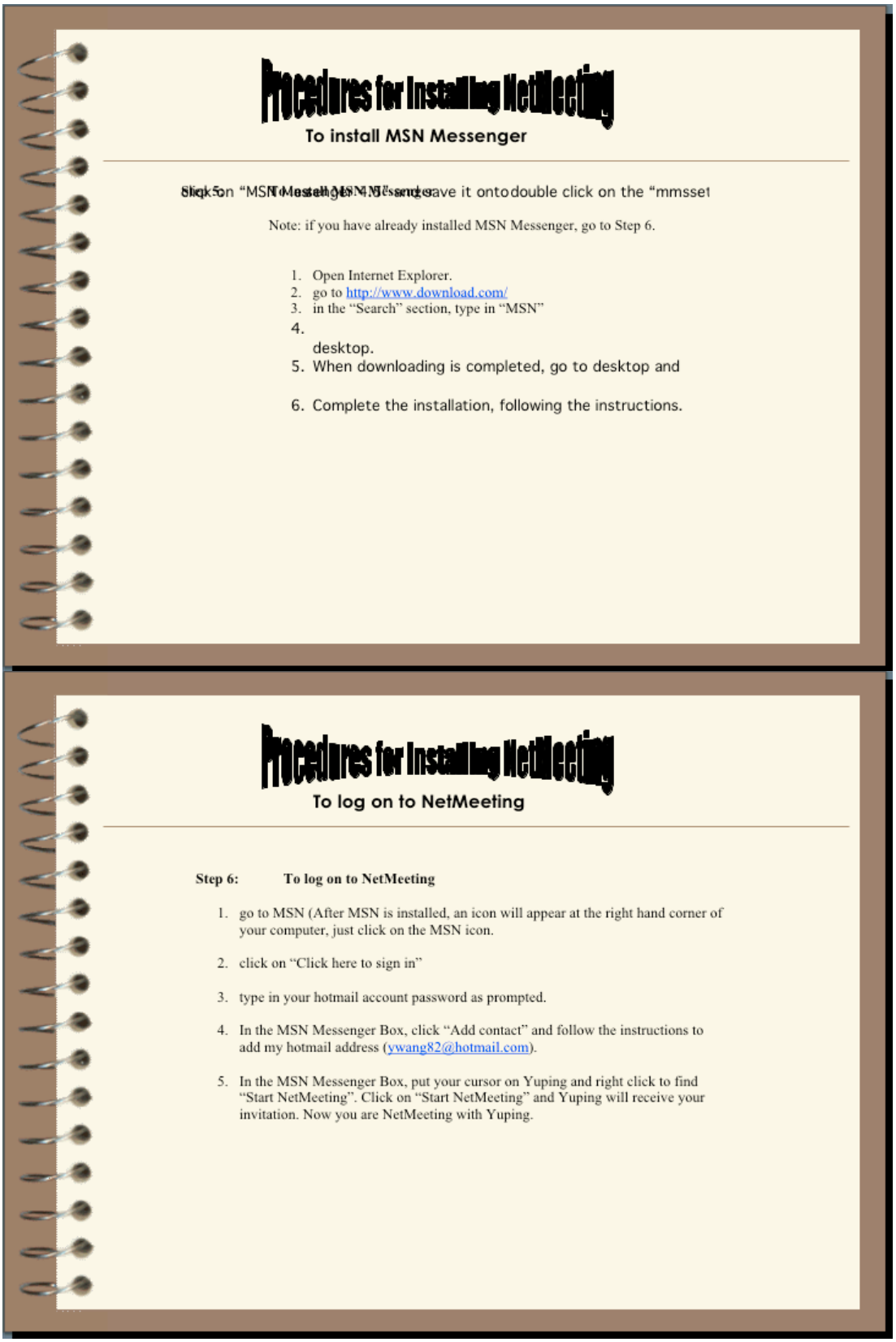
## APPENDIX A.
## Installation Manual for NetMeeting




Procedures for Installing NetMeeting
To install Logitech QuickCam
Step 3: To install Logitech QuickCam
1. Insert the QuickCam CD into your CD drive
2. Select "Install/modify QuickCam software and follow the instructions. (Please note: after the installation, the computer will automatically restart itself).
3. After the computer restarts, it will ask you to plug the Logitech QuickCam into your computer. (Please note: do not plug the Web Cam into your computer before you run the installation program).
4. Plug your headphone into your computer.


Procedures for Installing NetMeeting
To open a hotmail account
Step 4: To open a hotmail account
Note: if you don't have a Hotmail or MSN account, you need one to participate in NetMeeting.
1. Run NetMeeting
2. go to CALL and select Directory
3. click on "Click here to sign up for a Hotmail Account" and follow the instructions.
Please note don't forget to record your Hotmail address and password on a piece of paper because you need to use them every time you log on to NetMeeting.



Procedures for Installing NetMeeting

To install MSN Messenger

Step 5: To install MSN Messenger

Click on "MSN Messenger 7.0" and save it onto desktop and double click on the "mmsset

Note: if you have already installed MSN Messenger, go to Step 6.

1. Open Internet Explorer.
2. go to http://www.download.com/
3. in the "Search" section, type in "MSN"
4. 
   desktop.
5. When downloading is completed, go to desktop and
6. Complete the installation, following the instructions.

Procedures for Installing NetMeeting

To log on to NetMeeting

**Step 6: To log on to NetMeeting**

1. go to MSN (After MSN is installed, an icon will appear at the right hand corner of your computer, just click on the MSN icon.
2. click on "Click here to sign in"
3. type in your hotmail account password as prompted.
4. In the MSN Messenger Box, click "Add contact" and follow the instructions to add my hotmail address (ywang82@hotmail.com).
5. In the MSN Messenger Box, put your cursor on Yuping and right click to find "Start NetMeeting". Click on "Start NetMeeting" and Yuping will receive your invitation. Now you are NetMeeting with Yuping.

**APPENDIX B**
**Questions and Summary of Results of the Post Trial Survey**

## Student Evaluation

N = 4 (Participant C did not complete the Post Trial Survey due to her withdrawal.)

**Part One -- Background Information**

1. How long have you been learning Chinese? **PTS - 1.1**

   _____

2. Apart from the Open Learning Chinese program you are now enrolled in, at what other places have you studied Chinese? Please indicate the appropriate bracket (s) with an X. You may select more than one. **PTS - 1.2**

   (a) None ( )

   (b) An institution in China ( )

   (c) An institution in Australia ( )

   (d) An institution in Taiwan ( )

   (e) Other (please specify) _____ ( )

3. How did you practice your speaking skills before this trial? Please indicate the appropriate bracket (s) with an X. You may select more than one. **PTS - 1.3**

   (a) Never practiced ( )

   (b) With Chinese friends ( )

   (c) With my neighbours ( )

   (d) With tapes ( )

   (e) With my colleagues ( )

   (f) With people in my family ( )

   (g) Other (please specify) _____ ( )

| Participants | Q1: Length of learning Chinese | Q2: Other places of study | Ways of practicing speaking Chinese before this trial |
|---|---|---|---|
| Participant A | 10 months | none | Never practised |
| Participant B | A few years | Taiwan and Germany | With tapes, Rosetta Stone (an online course) |
| Participant C | 10 months | none | With tapes |
| Participant D | 10 months | none | With tapes and Chinese speakers |
| Participant E | 2 years | Anther institution in Australia | With tapes and colleagues |

**Part Two - Evaluation of NetMeeting**

1. Please rank the following features of NetMeeting according to their **usefulness** in learning Chinese. Number 1 represents most useful and Number 5 least useful. Please put an number in each bracket.

**PTS - 2.1**

(a) Video (the image) ( )

(b) Audio (the sound) ( )

(c) File Transfer ( )

(d) Sharing (sharing document on your desktop ( )

(e) the Whiteboard ( )

(f) My Video (the self image window)

| | No.1 | No.2 | No.3 | No.4 | No.5 | No.6 |
|---|---|---|---|---|---|---|
| audio | 4 | | | | | |
| video | | 3 | 1 | | | |
| File Transfer | | 1 | | 1 | 2 | |
| Sharing | | | | 2 | | |
| Whiteboard | 1 | | 3 | | | |
| My Video | | | | | 2 | 2 |

Note: Participant E put number 1 for both audio and the Whiteboard. Sharing was not rated by Participant D and E.

2. Below is a list of possible **strengths** of NetMeeting for language learning. Please put an X in the appropriate bracket (s) when NetMeeting helped you. You may select more than one:

**PTS - 2.2**

| Strengths | Results |
|---|---|
| (a) Building my confidence in speaking Chinese | (4) |
| (b) Reducing my anxiety in learning Chinese | (3) |
| (c) Reducing isolation in learning in distance mode | (3) |
| (d) Increasing my motivation in learning the language | (3) |
| (e) Seeing the person I am talking to | (3) |
| (f) Allowing instant feedback from the teacher | (4) |
| (g) Allowing mistakes to be corrected on the spot | (4) |
| (h) Providing me the opportunity to interact spontaneously with someone | (4) |
| (i) Negotiating for meaning using Chinese | (3) |
| (j) Allowing me to ask for more information using Chinese | (4) |
| (k) Allowing me to clarify meaning using Chinese | (4) |
| (l) Inferring meaning according to the context | (3) |
| (m) Improving my listening skill | (4) |
| (n) Other (please specify) __ having fun | |

3. Below is a list of possible **weakness** of NetMeeting for language learning. Please put an X in the appropriate bracket (s). You may select more than one

**PTS - 2.3**

| | |
|---|---|
| (a) It's too difficult to use | (0) |
| (b) It's too difficult to set up | (1) |
| (c) It's one-to-one mode only | (1) |
| (d) The quality of the **video** is not good enough for language learning | (1) |
| (e) The quality of the **audio** is not good enough for language learning | (0) |
| (f) It lacks support for group discussion | (0) |
| (g) The Internet transmission was not reliable | (3) |
| (h) NetMeeting was not reliable | (1) |
| (i) You have to do it at certain times because of Internet congestion | (3) |
| (j) Other (please specify) _____ | (0) |

4. How reliable was NetMeeting? Please indicate on the diagram below with an X. (Please Note: reliable here refers whether or how often NetMeeting crashed)

**PTS - 2.4**

| Very reliable | | | | | | | | | Not reliable |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | (2) | (1) | | | | | | (1) | |

Please explain why

- I have marked 2, basically very reliable, as even though the system froze a couple of times, it was quickly remedied by either inviting the person to netmeet again, or a quick restart of the computer. As I say, it only happened a few times, but was easily fixed.
- The problems I experienced were not due to the Netmeeting program itself, but more to the connection between my school and Griffith University. Once we had established successful contact the meetings were very smooth.
- Seemed quite reliable in terms of program stability, I can only remember having to re-boot it once or twice during the sessions
- My net meeting [NetMeeting] trial had a lot of problems. Beyond the hardware problems, there was difficulty with the internet connection and its speed, the netmeeting application. We tried to achieve success many times, and only had one successful attempt.

5. Please write down what you **liked** when using NetMeeting for learning Chinese and **why**.

**PTS - 2.5**

- It was just so nice as a distant student learning a difficult language to have face to face tutor contact. Distance students normally are studying via distance ed because they are busy- so it was a bonus to be able to practice speaking Chinese with my tutor in my own home! Before the sessions, I used to freeze when I tried to string a sentence together spontaneously! Netmeeting has enabled me to overcome that initial fear of being asked a question in Chinese, to only feel embarrassed that I cannot think of a response, even though I have learned the words! I am not quite fluent yet (ha ha!), but I definitely have the confidence now to take on further challenges in Chinese conversation! I also really liked putting a face to my tutor's name, which I have not been able to do in any other open learning units.
- I liked the one on one nature of the medium which provided for very intensive lessons. Plus the features of Netmeeting that allowed for instant feedback (e.g. whiteboard), and introduction of other materials e.g.: documents (sharing) and video [sending a video clip] (although it did not work in my case) relevant to the context of the face to face dialogue.

- Although not related to the program per se, the difficulties encountered with unreliable internet transmission was a real nuisance, particularly when then sound broke up or was not transmitted at all. These problems do not seem to be insurmountable with e.g. faster internet connections on both ends and judicious timing of link-up.
- I really liked being able to converse face to face. With no other Chinese speakers to converse with, this was of immense benefit. I was able to ask questions and receive immediate answers, was able to practice speaking and gain confidence, and was able to 'humanise' what had previously been an isolated academic experience.

6. Please write down what you **did not like** when using NetMeeting for learning Chinese and **why.** **PTS - 2.6**
   - The first 20 seconds or so, the video and sound sticks, freezes and delays, but it seemed to go alright after that. Occasionally during the session the video and sound would freeze again. This, when it happened, made listening a little difficult, and the delays meant not being able to equate the sound with facial expressions etc. But compared to the hundreds of positives I experienced with netmeeting, this is really just a very minor inconvenience, and will only get better as technology improves- which is very rapid these days! To put it this way, if it was not for having the opportunity of these netmeeting sessions, I would be 500% worse at speaking and understanding Chinese than I am now! So in the big scheme of things, these minor delays were really not an issue.
   - It was very difficult to attain success. A lot of the time, we did not know what was going wrong, so perhaps more technical support would be of benefit. It was quite a difficult exercise. Other than that, I found the whiteboard difficult to use in that the Chinese characters were difficult to decipher. I don't think my character recognition was helped by netmeet [NetMeeting].
   - Although not related to the program per se, the difficulties encountered with unreliable internet transmission was a real nuisance, particularly when then sound broke up or was not transmitted at all. These problems do not seem to be insurmountable with e.g. faster internet connections on both ends and judicious timing of link-up.
7. Through the five NetMeeting sessions, what aspects of ***Chinese language learning*** did you feel improved? Please put an X in the appropriate bracket (s) below that best describe your own experience. You may select more than one. **PTS - 2.7**

| | |
|---|---|
| (a) My fluency | (3) |
| (b) My pronunciation | (3) |
| (c) My listening ability | (4) |
| (d) My vocabulary | (3) |
| (e) My grammar and structures | (3) |
| (f) My reading | (0) |
| (g) My writing | (0) |
| (h) My speaking ability | (4) |
| (i) My conversational tactics (e.g., asking in Chinese for repetition and clarification of meaning, inferring meaning from the context, etc.) | (3) |
| (j) Spontaneous replies | (0) |
| (k) Other (please specify) _____ | |

8. How important do you believe is the **video** in NetMeeting to the improvement of listening and speaking skills? Please indicate on the diagram below. **PTS - 2.8**

| Important | | | | | | | | | Not important |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| (1) | (1) | (1) | (1) | | | | | | |

Please explain why

- The video is very important, because it is more personal to speak to each other face to face than on the phone. Silence is not a problem while you think of a response, because your tutor can see that you are thinking (very hard!). You can see facial expressions which is very important to try and guess what on earth your tutor just said when you can't understand any of the words! And again it is nice to have that face to face contact, and put a face to the name, both for student and teacher. The video can be a little scary at first, especially if you have not used netmeeting before in other situations. But like any new technology, it is also exciting, and any nerves of using the video quickly disappear!
- The importance of the video image lies in the fact that one gets the dialogue with the appropriate body language and facial expression, which do not only aid in understanding meaning but are part of the message itself. More specifically it seems to me that to achieve accurate pronunciation the opportunity of seeing the actual sound being formed by a native speaker is very helpful. It also would allow the teacher to do on the spot correction of mistakes through sound and visual demonstration.
- The video quality I experienced was never good enough to allow me to see my tutor's lips clearly, but I still got a lot from my sessions. I would love to experience the difference a good picture could make. [Because she used a laptop, the video quality was affected by the limited power of her computer]
- I think it is important, because it is helpful to 'see' your teacher. To have a telephone conference would not be as good. Seeing your teacher is more personal, and it makes you more comfortable, which assists with learning. Of course video is not as important as audio, but it is still significant.

9. If you were given a choice between one-to-one and many-to-many interaction (i.e. a group discussion) supported by a videoconferencing tool, which one would you choose? Please explain why

**PTS - 2.9**

- I think for beginners, one to one maybe better, to give them the confidence and practice. Then maybe for advanced students with a wider vocab, a group chat session would be better. I found that when I did not understand something, my tutor had to keep asking me again and again until I worked out the meaning. This is the best way to help a beginner like myself get used to hearing and understanding, but I think other students would get a little bored of waiting! Group discussion would be great for more experienced students, but I have never been involved in one, so I do not know how the technology would cope, ie. delays etc.
- In an ideal world I would like to experience both, but if asked to choose, I would definitely choose the one-to-one option because it provides more efficient communication in the short time available. However, many-to-many would probably allow more variety of communication.
- I would choose one-to-one, because I feel a videoconference [with more than one person] would be very difficult to learn and contribute to. I have been part of a video conference before, and I did not find it to be beneficial. I would love to take part in a group that was face-to-face, but with netmeet [NetMeeting], I would prefer to speak with just one other person.
- [one-to-one interaction is] particularly useful, because it allows for an intensity of interaction which one rarely gets in the regular classroom setting.

10. Are there any other feature(s) do you think important for language learning? (other features include File Transfer, the Whiteboard, Sharing Document, My Video and audio.)

**PTS - 2.10**

- Yeah the whiteboard helped heaps. When I could not understand a word my tutor could write it on the board. (Well at first the character, which I was none the wiser with!), but writing the pinyin was good, as sometimes I thought I was hearing a totally different sound. The more this happened though, the more I got used to the way my tutor pronounced the words. (the correct

way as opposed to my incorrect way!). We used the sharing files feature was to talk about family photos. But this feature could be used for endless conversation possibilities.

- We used all those features at time and they were largely useful of specific purposes e.g. video in conjunction with audio gives the opportunity to see body language and facial expressions which contribute to the communication process.
- The whiteboard proved useful for instant demonstration of written language w.o. [without] Having to go to cumbersome keyboard input methods [the use of the mouse to write characters].
- Perhaps more phone support at times could be helpful in order to motivate and reduceisolation.

11. How important do you believe is the oral-visual interaction provided by NetMeeting to your learning of Chinese? Please indicate on the diagram below with an X.

**PTS - 2.11**

| Important | | | | | | | | | Not important |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | (1) | (3) | | | | | | | |

Please explain why

- I think I have covered this response in my comments above.
- important in providing visual cues to involved in the communication process useful also for demonstrating and correcting sound formation in establishing correct Pronunciation.
- If you cannot speak with and see anyone while you are learning a language, it is very difficult to improve and to become fluent. It is integral that a student be able to practice what they are learning.
- It creates more of a classroom feeling which is a useful adjunct to all of the individual study that must be done by a distance education student".

12. How easy was it to use NetMeeting? Please indicate on the diagram below with an X.

**PTS - 2.12**

| Very easy | | | | | | | | | Very difficult |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| (1) | | (1) | (1) | (1) | | | | | |

Please explain why

- Netmeeting was very easy to use, as the program is user friendly, and simple to follow.
- Because of technical difficulties I did not find the Netmeeting program easy to use - that is I experienced difficulties making connection, but this was a problem with firewalls. Once these technical difficulties were fixed, the actual Netmeeting program is very user friendly, and easy to operate. My low rating is due to the initial connection difficulties.
- There were many problems in my trial. NetMeeting seemed to have a lot of unexplainable technical problems that we were largely unable to rectify.
- The visual layout of the program window and the conveniently arranged buttons for the ancillary features (whiteboard, file share etc) were not too numerous and complex. Plus in case of difficulties the person experienced with the program was able to give immediate face to face help. The big bugbear was the reliability of the connection.

13. Do you think that NetMeeting should be incorporated into the Open Learning Chinese Program after the trial? Why?

**PTS - 2.13**

- Yes I do think that netmeeting should be incorporated into the OLA Chinese Program, because of all the reasons above! The trial has been a great opportunity for me to improve my Chinese, and therefore using netmeeting as a set part of the course would obviously be nothing but

advantageous for students and their results, and most importantly their enthusiasm and motivation by having fun learning Chinese!

- Yes, I do. Although my trial had a lot of technical problems, I can certainly see the immense benefit in having NetMeeting in the Open Learning Chinese Program. Without it, Chinese is extremely difficult to learn without any other support. I think Netmeeting is almost a necessity.
- Provided the technical problems related to unreliable and slow connection can be at least minimized, I would strongly support the incorporation of NetMeeting into the Chinese program. All the features of the program provide useful aids for the language learner, e.g.: sharing, video, whiteboard. Initially one might consider using NetMeeting as the preferred form of liaising with the tutor during the regular time slot provided for the purpose.
- I rarely found the quality of the picture really sharp, so it didn't really assist my learning to see my tutor. However I absolutely loved having the opportunity to converse with someone in Chinese. Apart from being exciting, it motivated me to continue studying, and gave me some much needed contact with someone. Therefore I think some kind of video conferencing should be used. The very best thing would be for some opportunity to speak with small groups including other students on some occasions, and the opportunity to speak only with the tutor on other occasions. I think I learned a lot in a short time while talking with my tutor, and would like to see continued opportunity to develop spontaneous conversation skills in this way.

14. Other comments **PTS - 2.14**

- Thank you for the opportunity, I have appreciated it very much!
- The trial really showed me that it is possible to learn a language through distance education. Although it is still difficult, and there are a range of technical problems, it is a great idea, and I would recommend it as a significant educative tool.
- In my view, it is difficult to learn Chinese by distance education unless there is a component of conversation included. Netmeeting could be an effective way to build some regular conversation practice into Chinese studies. (Participant E)

This is the end of the questionnaire.

**Thank you very much for helping me with this project.**

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